CENTER FOR BIOMOLECULAR TECHNOLOGIES

CENTER

The Center for Biomolecular Technology was established in 1998 to develop and commercialize technologies aimed at (1) improving the efficiency of detecting rearrangements in the human genome and (2) reducing the high cost of genetic microarrays, i.e., "gene chips" or "biochips", which are ideally suited to unraveling complex genetic information. The versatile biochip technology could be used to detect almost any micro-object including DNA fragments, proteins, nutrients or pathogenic microorganisms.

TECHNOLOGY

To improve the efficiency of detecting genetic rearrangements, the Center technology is focused on the development of proprietary reagents, methods, and kits that permit the bulk isolation and quantification of DNA with either specific or random rearrangements from, e.g., a small blood sample. This technology promises to replace the present methods, such as fluorescence microscopy and polymerase chain reaction (PCR) analyses, in the detection of such rearrangements.

To reduce the cost of commercial microarrays, the Center technology is focused on developing devices ("biochips") and reagents for the detection of DNA, proteins, cells, or other small objects by developing low-cost, disposable biochips. Each biochip may have hundreds of thousands of uniquely addressable microlocations. The Center's novel proprietary approach provides an opportunity for substantial cost reductions in the microarray technology along with significant enhancements in user applications.

ACCOMPLISHMENTS

The Center's efforts during the first two years were principally focused on the development of model systems, proof-of-principle demonstrations, and on disclosures and patents to secure these proprietary technologies. Initial model systems were developed and successfully tested for both technology types. One provisional patent application has been filed and two inventions have been disclosed.

A new spin-off company, GenMetrix LLC, has been formed to commercialize the DNA

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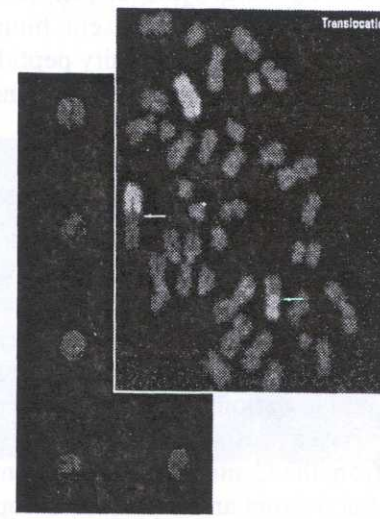
Can You Imagine...

. . . being able to identify potential inheritable genetic disorders to provide appropriate medical/genetic counseling; and being able to detect a myriad of specific molecules on biochips?

THE CENTER WAS ESTABLISHED TO DEVELOP IMPROVED TECHNOLOGIES TO EVALUATE DNA DAMAGE AND CHROMOSOME REARRANGEMENTS AND DEVELOP NEW COST-EFFECTIVE BIOCHIPS



The Center technology would eliminate the need for costly cytogenetic analyses to detect chromosome rearrangements such as the translocation identified in the above microscope image (modified from Straume et al. 1992). Instead, the Center's proprietary reagents and methods are used to extract and quantify such events directly from bulk samples of cells. Also shown above is a small part of a test array consisting of proprietary reagents with properties that permit efficient positioning and detection. The array agents, together with special array devices, are designed to actively transport DNA proteins, cells, or other small objects into low-cost, disposable microarrays.